

FIGURE 1

Typical set-up with computer recording live data converted to tonnage with belt scale monitor (top unit) showing actual tonnage moving over conveyor

FIGURE: 2



- Item 1: 600 volt input wires for line 1, 2 & 3 for watt transducer & ground wire
- Item 2: Donut type 50:5 CT's for current input to watt transducer
- Item 3: 120 volt power supply wire for watt transducer
- Item 4: Clamp type CT for ampere method to collect data for tonnage conversion
- Item 5: Split-Core CT for ampere method to collect data for tonnage conversion
- Item 6: Instrument case with Watt Transducer installed
- Item 7: Instrument case with ACR Data logger installed
- Item 8: RS235 Cable to transfer data to computer
- Item 9: Lap-top computer to collect data
- Item 10: Screen showing live data and for display of Real-Time graph of data in Tonnes converted from kilowatts or amps

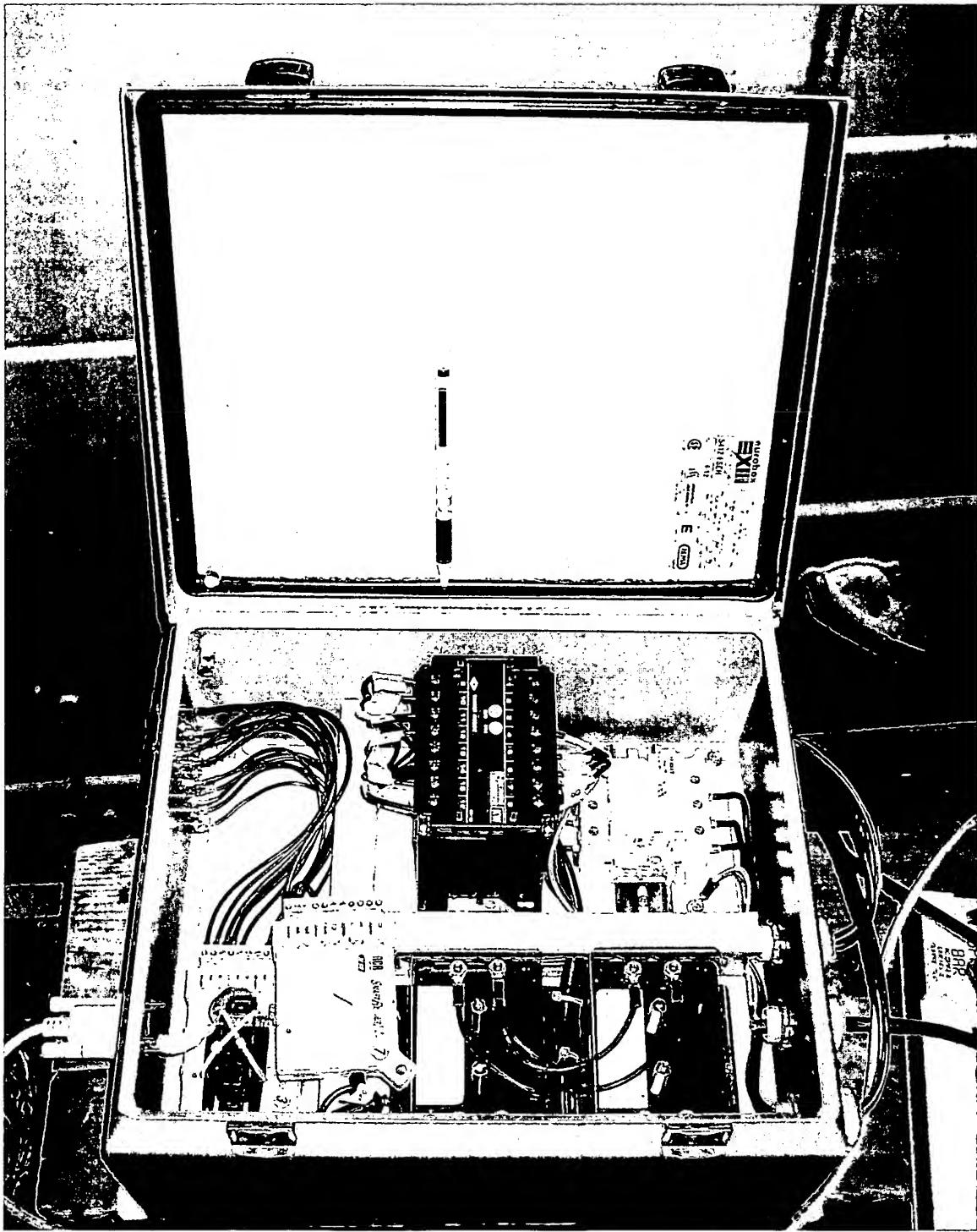


FIGURE 3:

GLOWE-TECH Tonnage Analyzer – Portable model with 2 Data Loggers capable of monitoring up to a total of 14 conveyor motors

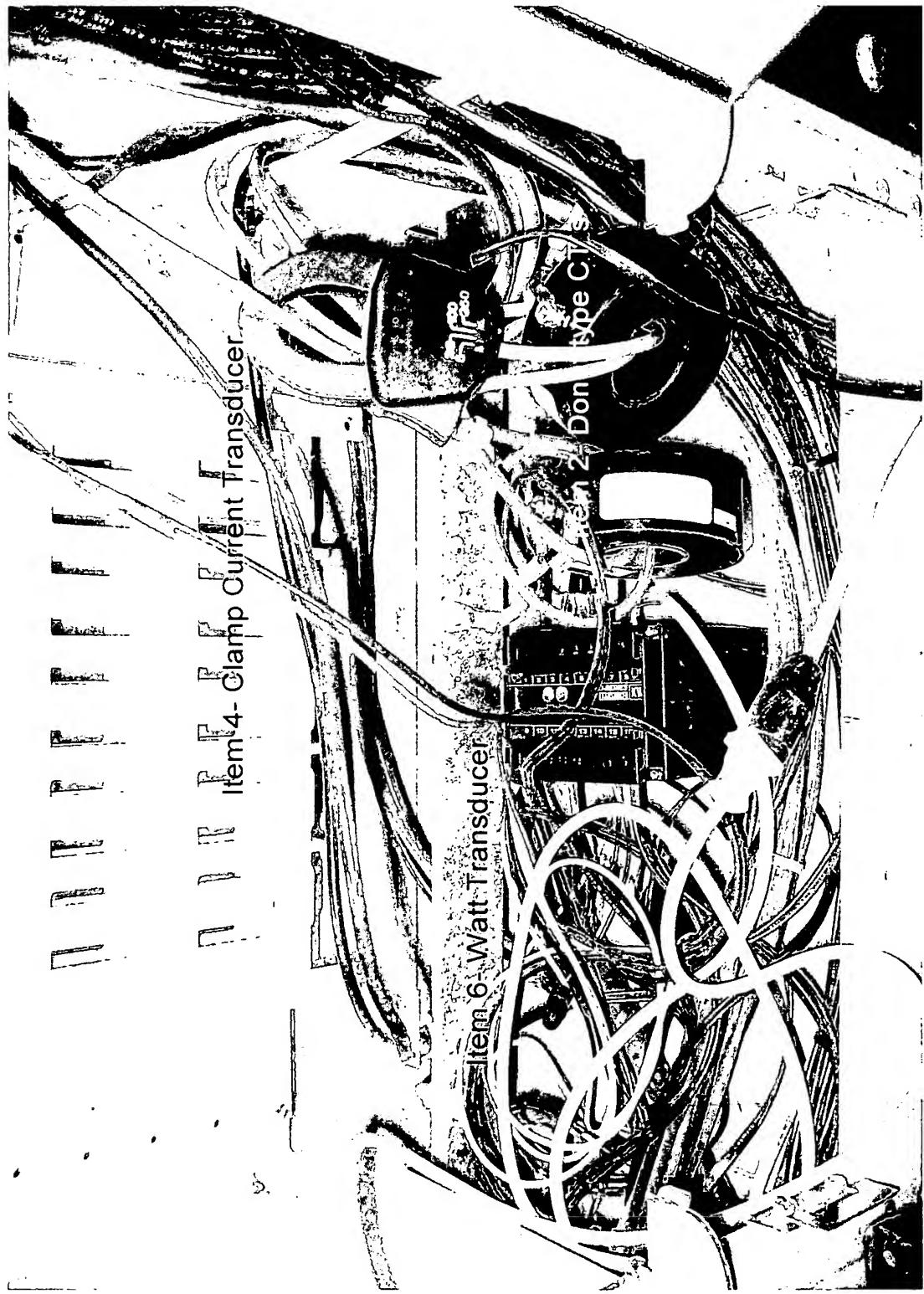


FIGURE 3b: Watt Transducer installation for Typical Conveyor Motor showing Clamp CT installed too

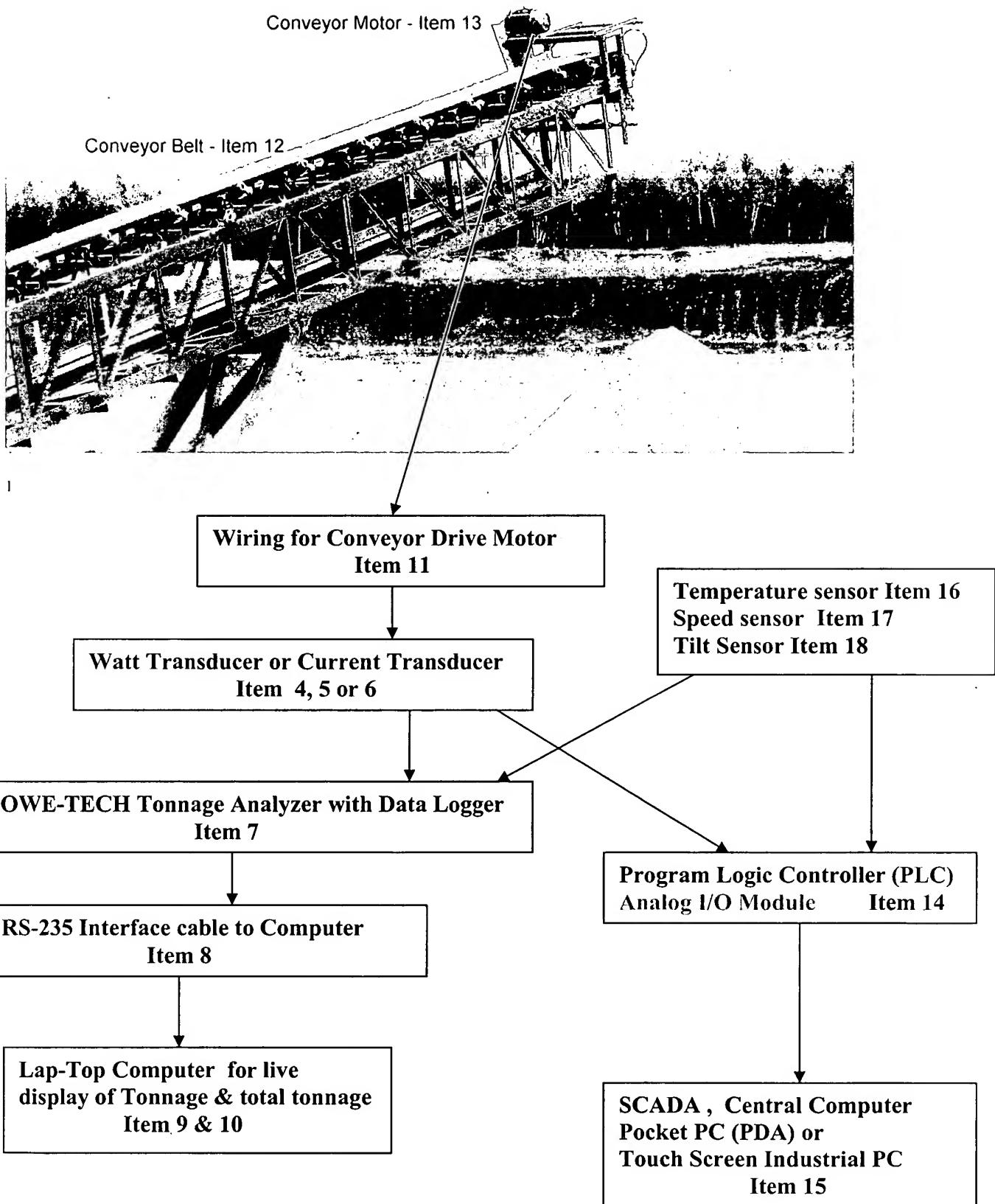


FIGURE: 4 Schematic of Typical Conveyor Belt Motor Tonnage Conversion

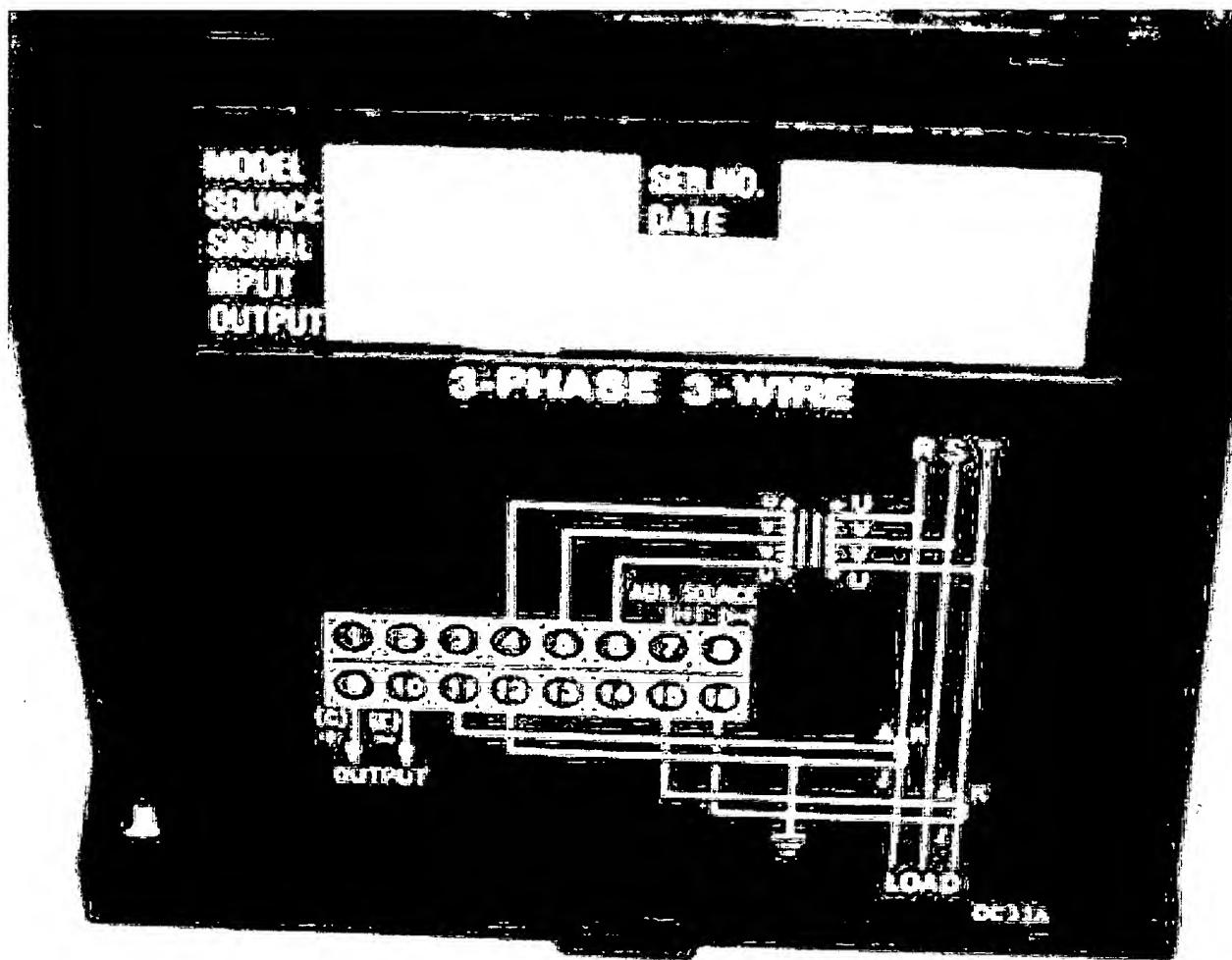
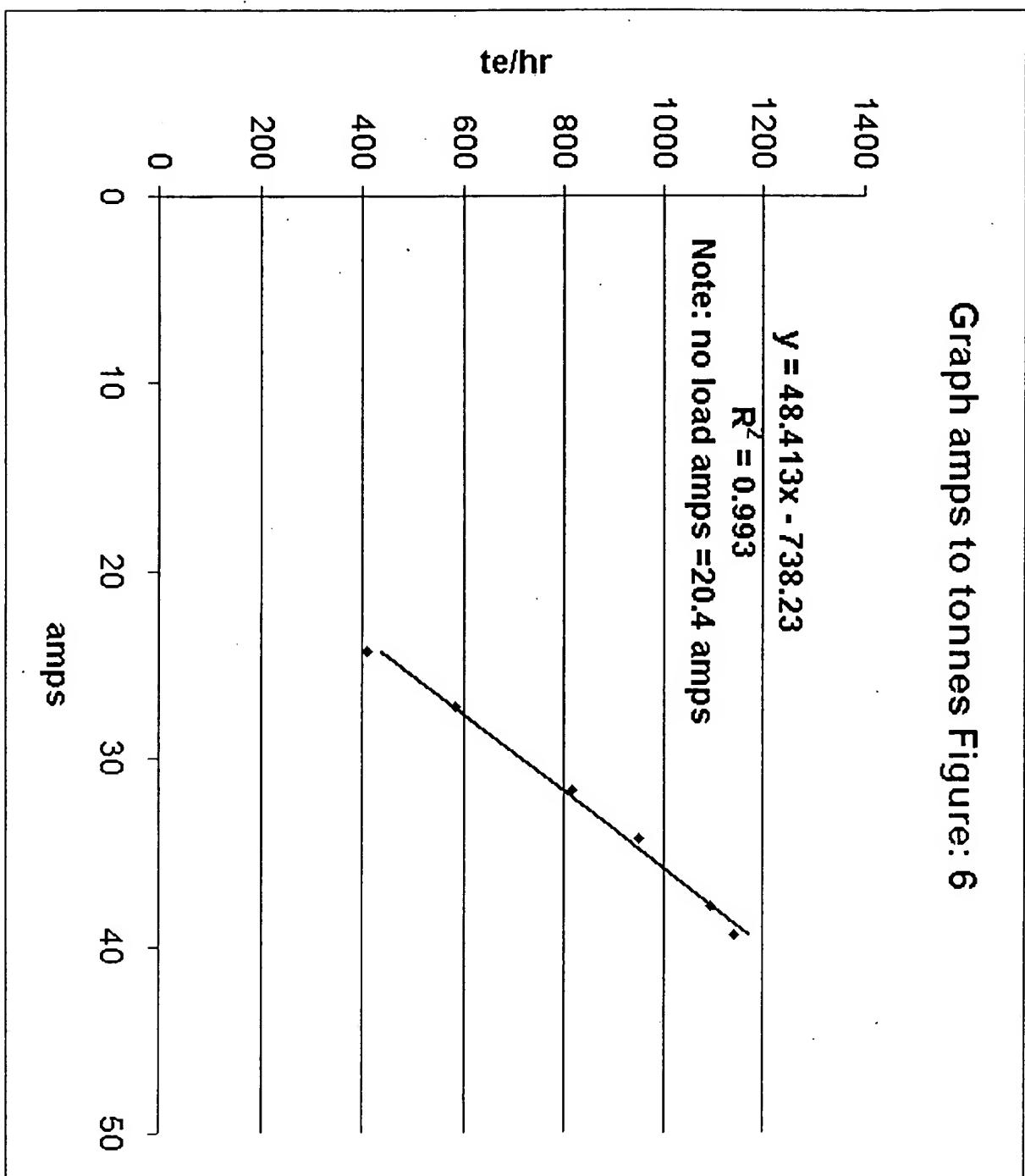


FIGURE: 5

GLOWE-TECH Typical wiring diagram for Watt Transducer

Graph amps to tonnes Figure: 6



Kwatts to tonnes Figure 7

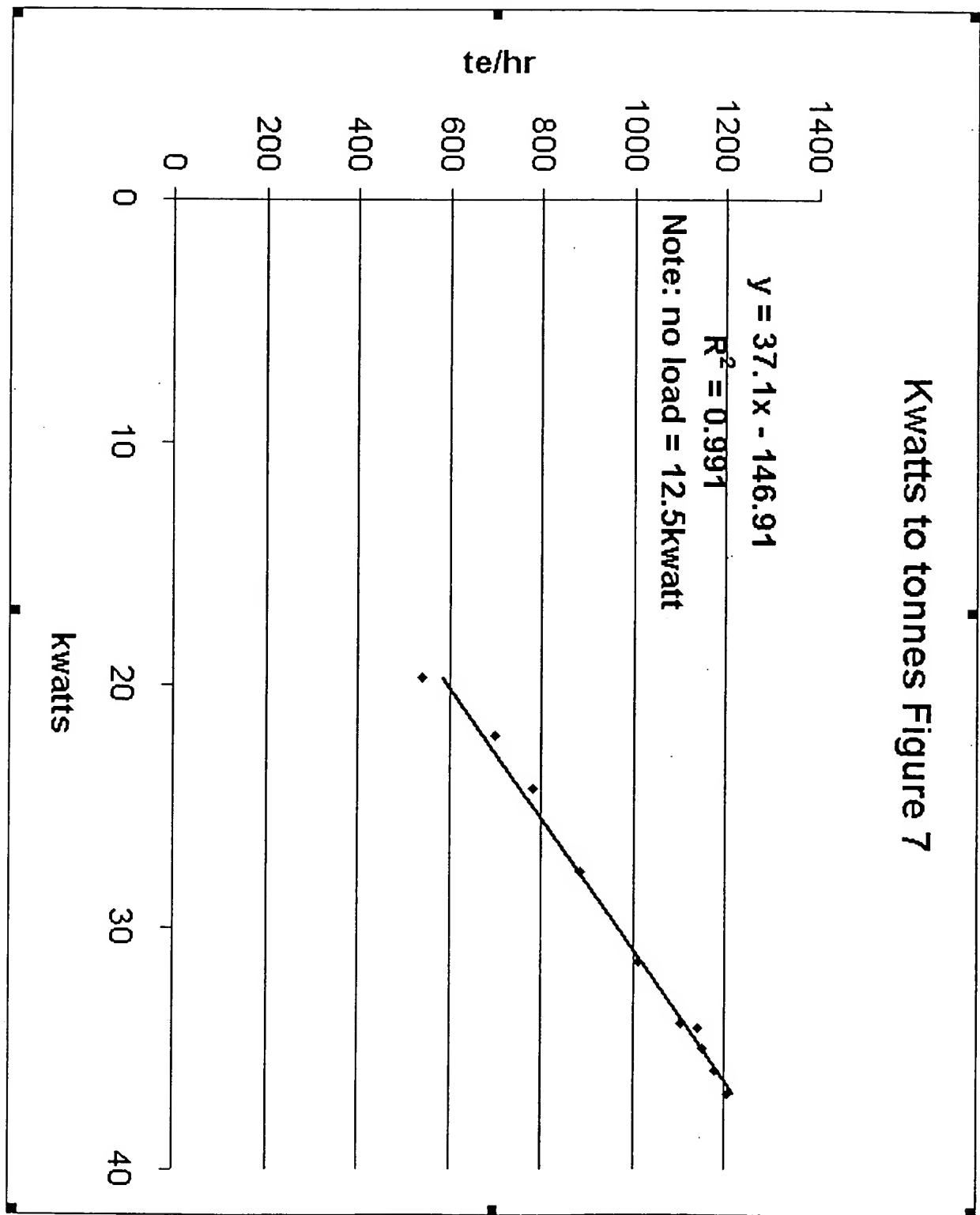


FIGURE: 8

Summary of Tonnage for Typical Conveyor using kwatts to tonnes

Date	Truck Count	actual Belt Scale tonnes	Corrected Belt Scale tonnes	kwatts conversion to tonnes	difference tonnes	amps conversion to tonnes	difference tonnes
April 15,02	126	6474.10	6474.10	6470.914	3.19	0	0
April 16,02	185	9552.40	9552.40	9404.079	148.32	9676.29	-123.89
April 17,02	145	7730.90	7730.90	7499.33	231.57	7753.309	-22.41
April 18,02	180	9451.50	9539.50	9412.356	127.14	9638.428	-98.93
April 19,02	166	8560.00	8665.00	8553.628	111.37	8737.455	-72.45
April 22,02	173	9138.00	9386.15	9447.105	-60.96	9465.383	-79.24
April 23,02	197	10453.00	10692.49	10717.322	-24.84	10323.369	369.12
April 24,02	159	7982.00	7982.00	8125.574	-143.57		
April 25,02	163	3705.00	3738.90	3773.876	-34.98		
April 26,02	164	8537.00	8757.00	8933.782	-176.78		
April 29,02	149	8150.00	8346.70	8418.175	-71.47		
April 30,02	156	8272.00	8482.00	8504.899	-22.90		
May 1,02	191	9901.00	10123.00	10138.142	-15.14		
May 2,02		10552.90	10758.00	10777.447	-19.45		
TOTAL		118459.80	120228.13	120176.629	51.50		

NOTE: Belt Scale tonnage was corrected for tonnage being added from April 18 to April 24th
then taking off tonnage due to removal of rock end April 24 which had fallen on belt scale

NOTE: Apr 24 to May 2 scale was taking tonnes from scale display at 15 to 25 te/hr

NOTE:kwatt calibration formula used as per graph is $37.1x - 146.91$ for all readings April 15 to May 2

NOTE: Amp calibration formula used as per graph is $48.413x - 738.13$ for all readings

FIGURE 8b

Comparison Table showing difference in GLOWE-TECH Analyzer Readings with Milltronics Belt Scale Readings

Date	Operating Time hours	No-Load time hours	Start-Up time hours	Production time-hours	Milltronics tonnes	GT Analyzer tonnes	Difference tonnes	Difference %
06-May-02	7.367	1.813	0.064	5.490	2830.000	2769.730	60.270	2.13
07-May-02	10.930	2.176	0.196	8.558	4374.000	4377.165	-3.165	-0.07
08-May-02	7.117	1.796	0.027	5.294	2791.000	2776.820	14.180	0.51
09-May-02	6.830	1.187	0.116	5.527	3119.500	3096.503	22.997	0.74
10-May-02	10.650	1.242	0.044	9.364	4494.000	4531.777	-37.777	-0.84
13-May-02	10.430	7.158	0.007	3.265	1845.900	1888.235	-42.335	-2.29
14-May-02	8.817	5.402	0.031	3.384	1866.000	1866.000	0.000	0.00
15-May-02	10.867	1.502	0.080	9.285	4659.000	4680.243	-21.243	-0.46
16-May-02	11.033	2.380	0.011	8.642	4563.000	4582.861	-19.861	-0.44
17-May-02	9.067	1.620	0.009	7.438	3799.000	3761.421	37.579	0.99
20-May-02	8.967	1.389	0.009	7.569	3792.000	3791.384	0.616	0.02
21-May-02	10.883	1.778	0.009	9.096	4226.000	4199.993	26.007	0.62
22-May-02	10.750	1.620	0.138	8.992	3925.000	3921.740	3.260	0.08
23-May-02	7.880	1.311	0.009	6.560	3261.000	3206.395	54.605	1.67
TOTAL				49545.400	49450.267	95.133		

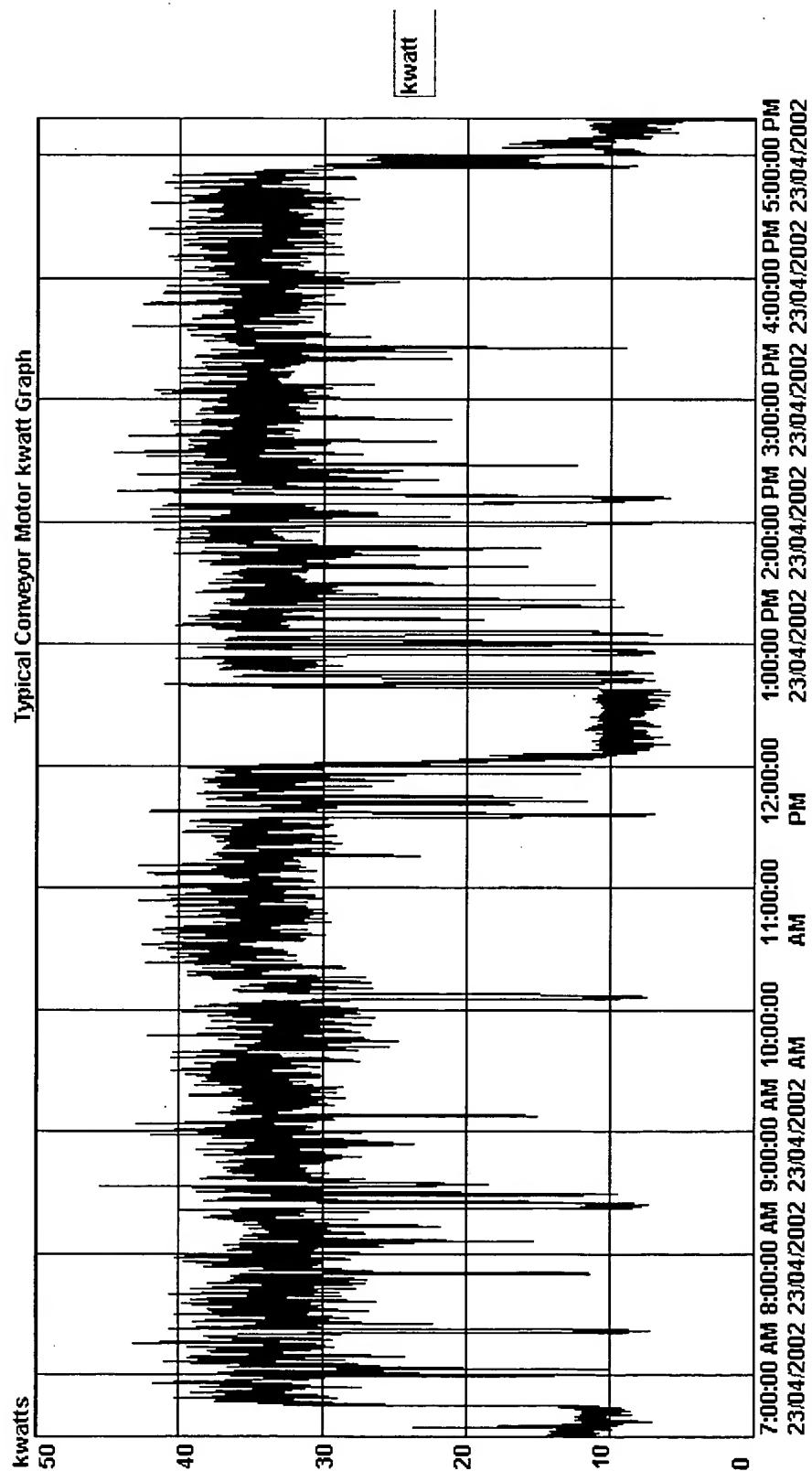


FIGURE: 9 kilowatt graph

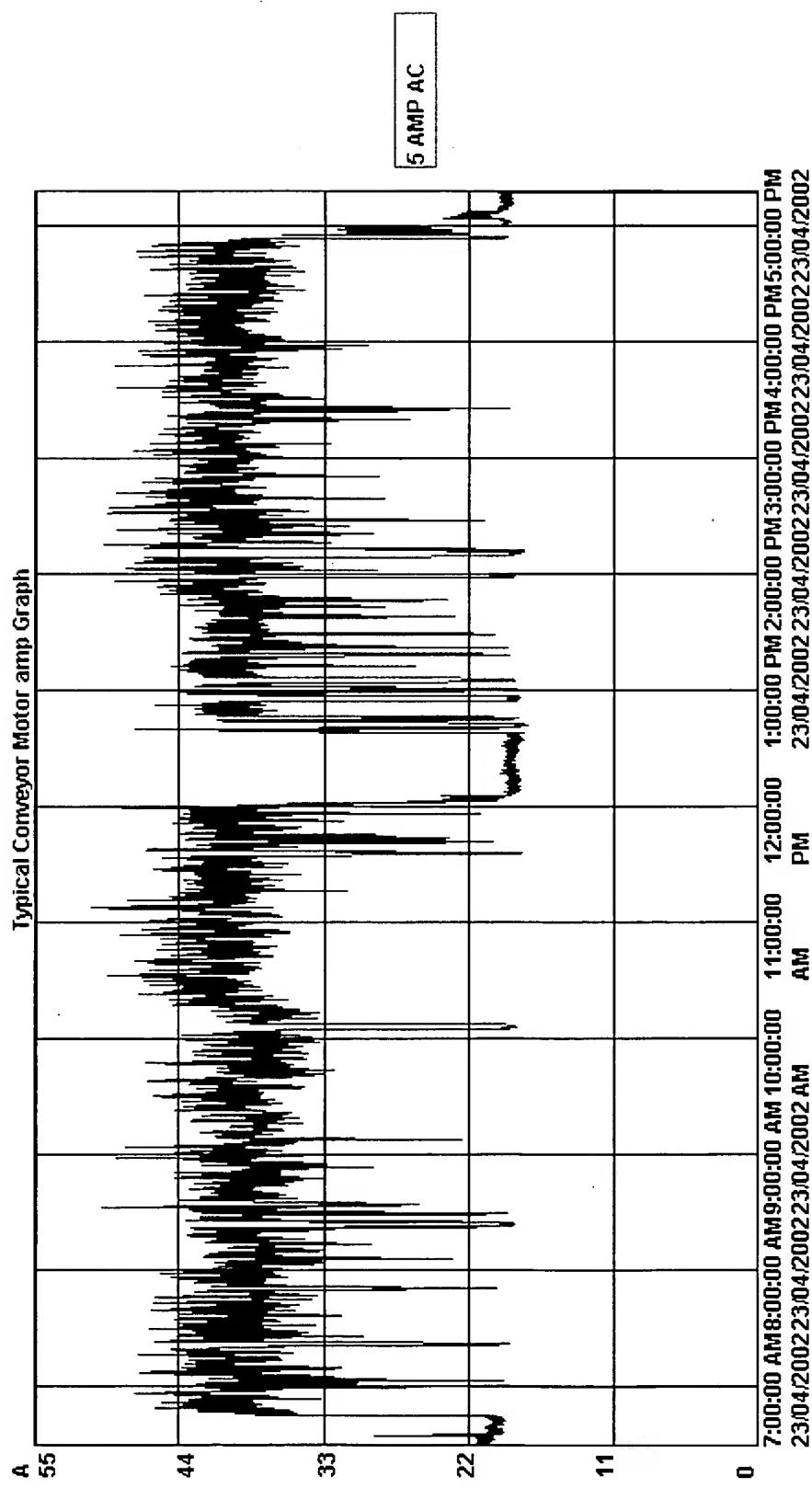


FIGURE: 11 ampere Graph

TYPICAL Quarry Amps to tonnage Summary Feb 12, 2003

FIGURE 12

Temperature am	Temperature pm	No load current =	25.000	9.000 degrees C
Time no load amps	Start up current =	80.000	10.553	15.000 degrees C
69.33 minutes	69.33 minutes	66.787	496.592	9.000 degrees C
5.87 minutes	5.87 minutes		5240.756	15.000 degrees C
11.709 hours			5184.000	
			-56.756 tonnes	
			5240.7003 tonnes totalized	
			-56.700 tonnes	

Time of reading	Actual Amps	Count no load	Count > startup Amps	Conditioned Amps	Tons/ hour on conveyor	Tons/hr on conveyor
12/02/2003 6:00:04	20.30774	1	0	0	60.226	428.974
12/02/2003 6:00:12	20.26378	1	0	0	59.259	419.006
12/02/2003 6:00:20	20.26378	1	0	0	60.710	433.959
				0	60.007	426.709
				0	56.314	388.646
				0	52.797	352.395
				0	46.774	290.316
				0	42.993	251.347
				0	37.453	194.253
				0	32.530	143.502
				0	27.606	92.752
				1	0	0

BREAK

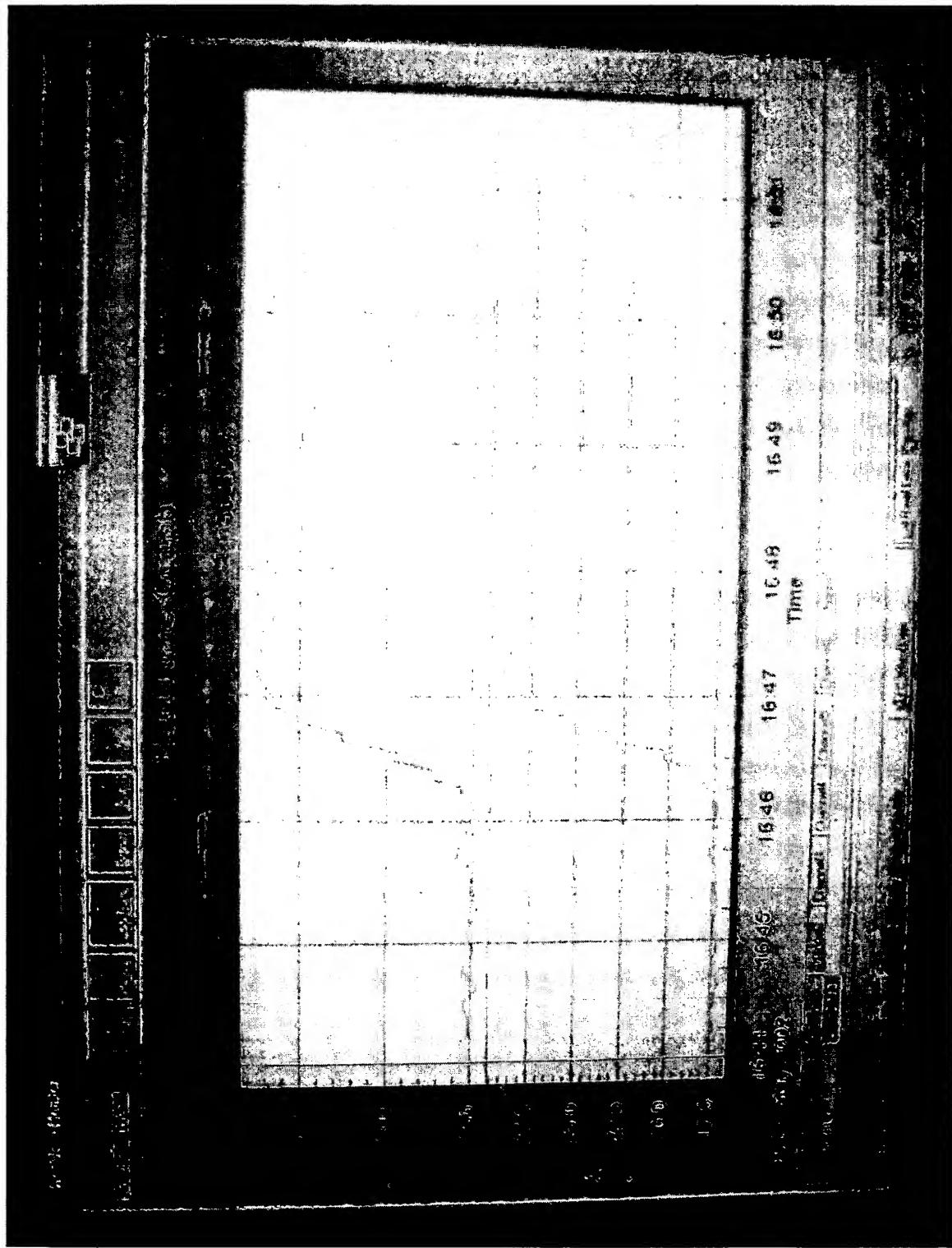


FIGURE 13a: - Typical Real Time Graph showing te/hr converted from Watt Transducer and a Real Time Graph of Amperage readings from the same Conveyor motor for parallel conversion to Tonnage for demonstration purposes.

Typical Daily conversion kilowatts to tonnes Aug 5, 2003										Calibration Formulas		
2										665.406 Ideal Formula Number		
3										590.903 01/08/2018, formula 1		
4										631.737 01/09/2015, formula 2		
5										652.916 Jun 20.03, Formula 3 currently used		
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												
40												
41												
42												
43												
44												
45												
46												
47												
48												
49												
50												
51												
52												
53												
54												
55												
56												
57												
58												
59												
60												
61												
62												
63												
64												
65												
66												
67												
68												
69												
70												
71												
72												
73												
74												
75												
76												
77												
78												
79												
80												
81												
82												
83												
84												
85												
86												
87												
88												
89												

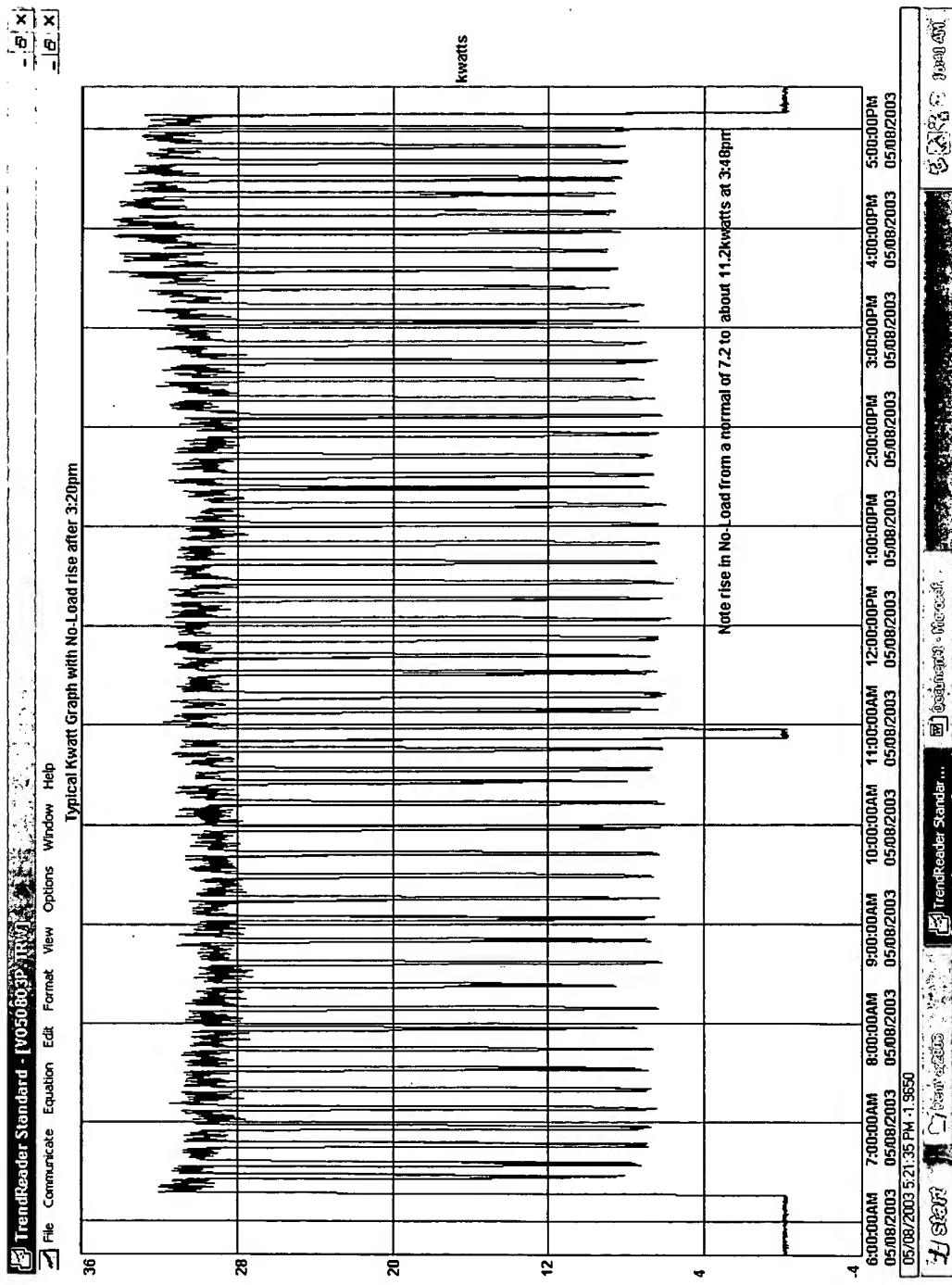


FIGURE 13d Typical Kilowatt Graph showing effect of change in No-Load caused by Friction on return side of Conveyor

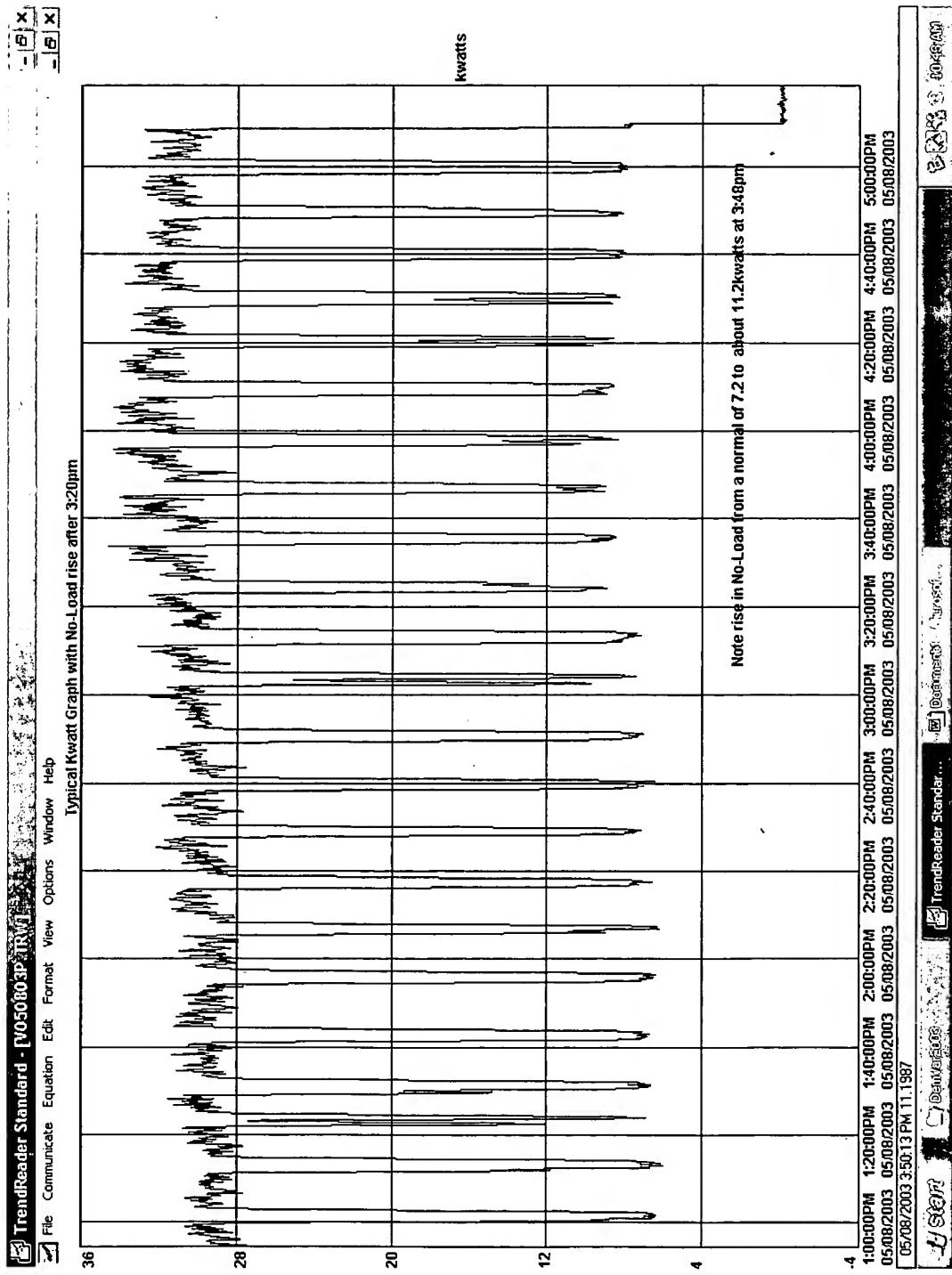


Figure 13e Enlarged view of change in No-Load readings caused by friction on Return Conveyor belt

	A	B	C	D	E	F	G	H	I	J	K
1 Figure 13f Typical Daily summary with No-Load Adjustment											
2											
3											
4											
5											
6 Time No-Load kwatt											
7 Time Start-Up kwatts											
8 Total Production time											
9 Average kwatt for day											
10 Average Tonnage by formula											
11											
12 Tonnage by belt scale											
13 Total tonnage by GT analyzer =											
14 Difference											
15 Percentage difference											
Time of data											
16 Reading	Reading	No-Load	Peak-load	Count	Count	Conditioned	tonnes/hr on conveyor	tonnes/hr on conveyor	No-Load	No-Load	
17 05/08/2003 6:16:26	0.07618	1	0	0	0	10.842	179.824	0	05/08/2003 15:46:18	9.2254	Average kw
18 05/08/2003 6:16:34	0.084231	0	0	0	0	12.557	231.932	0	04/08/2003 15:46:26	9.08925	Std dev
19 05/08/2003 6:16:42	0.075725	0	0	0	0	14.482	290.409	0	05/08/2003 15:46:34	9.41319	1.5 std dev
20 05/08/2003 6:16:50	0.08180	0	0	0	0	17.188	372.625	0	05/08/2003 15:46:42	10.15633	2.0 std dev
21 05/08/2003 6:16:58	0.078760	0	0	0	0	17.188	372.625	0	05/08/2003 15:46:50	11.26152	
4905 05/08/2003 17:08:10	32.7364	0	0	0	0	32.736	85.077	1.878			
4906 05/08/2003 17:08:18	32.06952	0	0	0	0	32.070	824.812	1.833			
4907 05/08/2003 17:08:26	32.83171	0	0	0	0	32.832	807.972	1.884			
4908 05/08/2003 17:08:34	29.09891	0	0	0	0	29.097	734.491	1.632			
4909 05/08/2003 17:08:42	26.23870	0	0	0	0	26.239	607.643	1.439			
4910 05/08/2003 17:08:50	22.02756	0	0	0	0	22.028	519.687	1.155			
4911 05/08/2003 17:08:58	15.75348	0	0	0	0	15.758	329.201	0.732			
4912 05/08/2003 17:09:06	11.45207	0	0	0	0	11.452	198.351	0.441			
4913 05/08/2003 17:09:14	7.88879	1	0	0	0						
4914 05/08/2003 17:09:22	7.75641	1	0	0	0						
4915 05/08/2003 17:09:30	7.73635	1	0	0	0						
4916 05/08/2003 17:09:38	8.07934	1	0	0	0						
4917 05/08/2003 17:09:46	7.66013	1	0	0	0						
4918 05/08/2003 17:09:54	7.77446	1	0	0	0						
4919 05/08/2003 17:10:02	0.00004	1	0	0	0						
4920											
4921											
4922											

Figure 13f Daily Summary Showing Impact of No-Load Adjustment due to dirt build up at 3:20pm

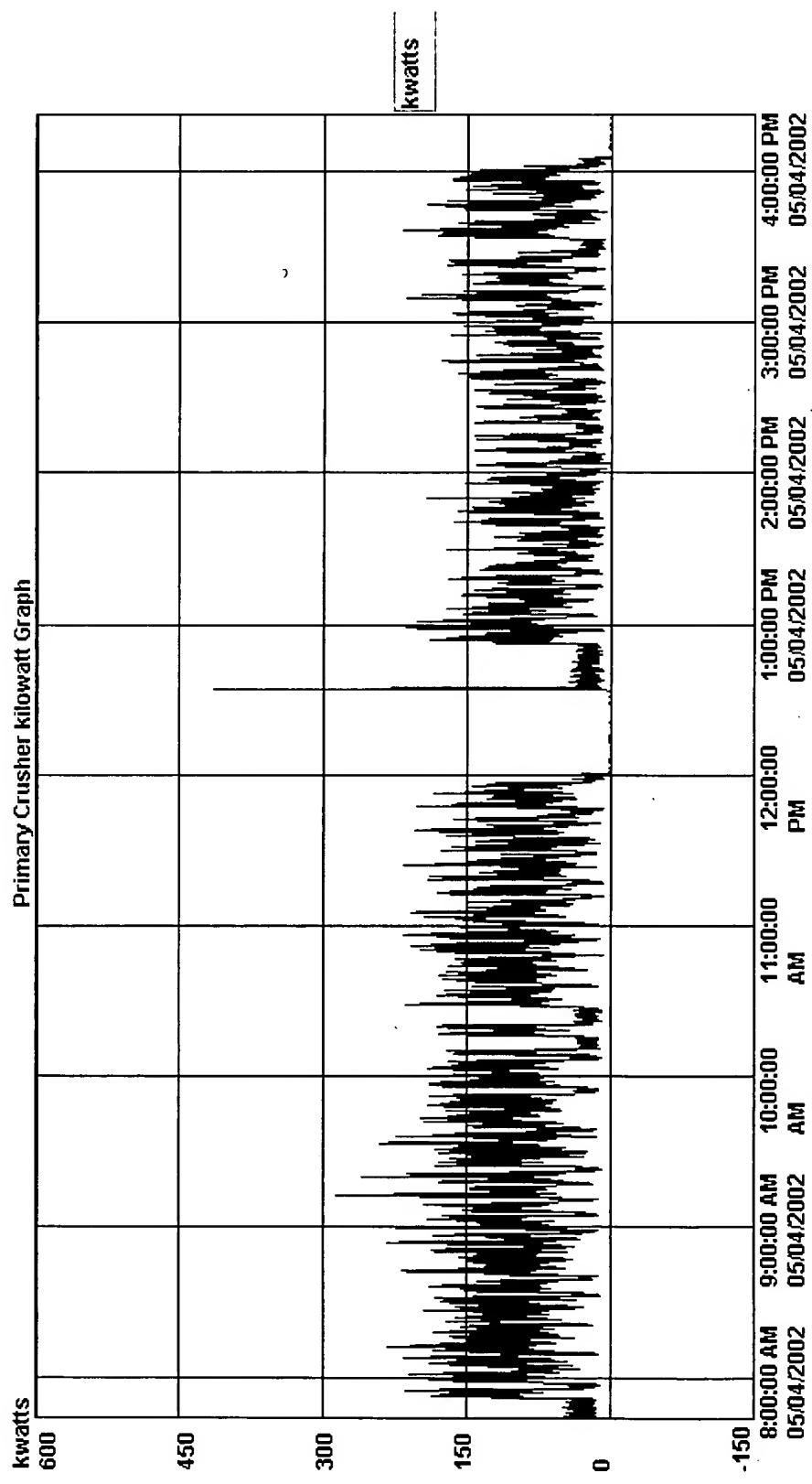


Figure 14: Typical Primary Crusher Graph

FIGURE 15

Typical Primary Crusher kwatt report April 5, 2002

No load kwatt =	30.000 kwatts			
Start up kwatts =	410.000 kwatts			
Time No-Load kwatt	144.400 minutes			
Time Start-Up kwatts	0.133 minutes			
Total production time 10 hrs 23 min	10.383 hours			
Total tonnes on Primary Conveyor Belt Scale	7.974 hours actual			
Average kwatt for day	7713.0 tonnes			
Total kwatts crushing	91.785			
Total te/kwatt crushed	731.906 kwatts			
	10.538 te/kwatt			
Time of data Reading	Actual Kwatt	Count No-Load	Count Over-load	Conditioned kwatt
05/04/2002 7:24:33	0.811	1	0	
05/04/2002 7:24:41	4.358	1	0	
05/04/2002 7:24:49	1.520	1	0	
05/04/2002 7:24:57	0.811	1	0	
05/04/2002 7:25:05	0.811	1	0	
05/04/2002 7:25:13	2.027	1	0	
05/04/2002 7:25:21	2.939	1	0	
05/04/2002 7:25:29	3.851	1	0	
05/04/2002 7:25:37	2.230	1	0	
05/04/2002 7:25:45	3.243	1	0	
05/04/2002 7:25:53	1.317	1	0	
05/04/2002 7:26:01	2.331	1	0	
05/04/2002 7:26:09	2.939	1	0	
05/04/2002 7:26:17	1.013	1	0	
05/04/2002 7:26:25	0.811	1	0	
05/04/2002 7:26:33	1.926	1	0	
05/04/2002 7:26:41	2.534	1	0	
05/04/2002 7:26:49	1.115	1	0	
05/04/2002 7:26:57	0.811	1	0	
05/04/2002 7:27:05	0.811	1	0	
05/04/2002 7:27:13	0.811	1	0	
05/04/2002 7:27:21	0.811	1	0	
05/04/2002 7:27:29	4.155	1	0	
05/04/2002 7:27:37	0.709	1	0	
05/04/2002 7:27:45	0.811	1	0	
05/04/2002 7:27:53	0.811	1	0	
05/04/2002 7:28:01	0.709	1	0	
05/04/2002 7:28:09	0.709	1	0	
05/04/2002 7:28:17	3.952	1	0	
05/04/2002 7:28:25	2.736	1	0	
05/04/2002 7:28:33	0.811	1	0	
05/04/2002 7:28:41	389.056	0	0	389.056
05/04/2002 7:28:49	53.306	0	0	53.306
05/04/2002 7:28:57	55.739	0	0	55.739
05/04/2002 7:29:05	51.178	0	0	51.178
05/04/2002 7:29:13	41.247	0	0	41.247

FIGURE 16

TYPICAL QUARRY. Kwatts Tonnage report Apr 3, 2003 With TEMPERATURE Effect

	-6.800 Degrees Celcius	-5.700 Degrees Celcius	Conversion formula	temperature
Temperature am				
Temperature pm				
No load kwatt =	12.400	21.000	203.846	Feb-13 -19
Start up kwatts =			222.018	Jan-30 -15
Time No-Load kwatt	10.000 minutes	0.167 hours	310.794	Apr-03 -6.5 used
Time Start-Up kwatts	0.000 minutes	0.000 hours		
Total Production time	2.058 hours	1.891 hours	309.306 ideal	
Average kwatt for day				
Average Tonnage by formula				
Actual Scale Reading				
Total tonnage by GT analyzer =				
difference				
Time of data Reading	Actual Kwatt	Count	Conditioned	tonnes/hour on conveyor
Reading	No-Load	Over-load	kwatt	Conveyor
03/04/2003 14:07:38	14.69497	0	0	14.695
03/04/2003 14:07:46	14.06031	0	0	14.060
03/04/2003 14:07:54	13.37682	0	0	13.377
BREAK				
03/04/2003 16:09:46	12.8398	0	0	12.840
03/04/2003 16:09:54	12.66892	0	0	12.669
03/04/2003 16:10:02	12.59569	0	0	12.596
03/04/2003 16:10:10	12.86421	0	0	12.864
03/04/2003 16:10:18	12.98626	0	0	12.986
03/04/2003 16:10:26	12.88862	0	0	12.889
03/04/2003 16:10:34	13.0839	0	0	13.084
03/04/2003 16:10:42	13.13272	0	0	13.133
03/04/2003 16:10:50	13.23036	0	0	13.230
03/04/2003 16:10:58	13.25477	0	0	13.255
				586.941 tonnes totalized
				1.9410 tonnes

Figure 21 PDA & Analog Data Logger wiring hook-up

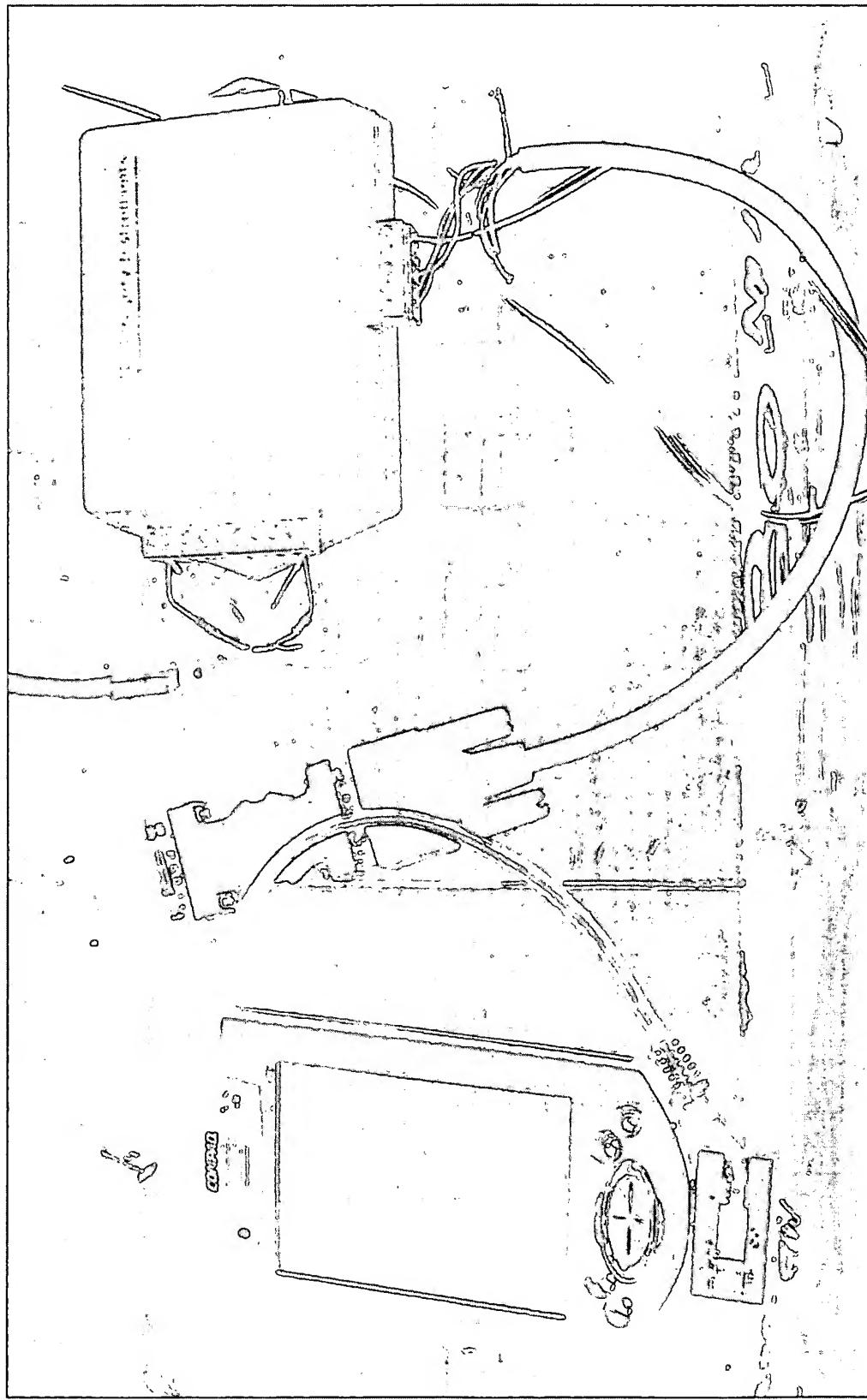


Figure 23 PDA Tonnage Analyzer

- Motor view with kwatt values and a zero test in progress for motors 1, 3, and 6. Zero test will confirm no-load operating conditions and any changes will be automatically incorporated in calibration formula.

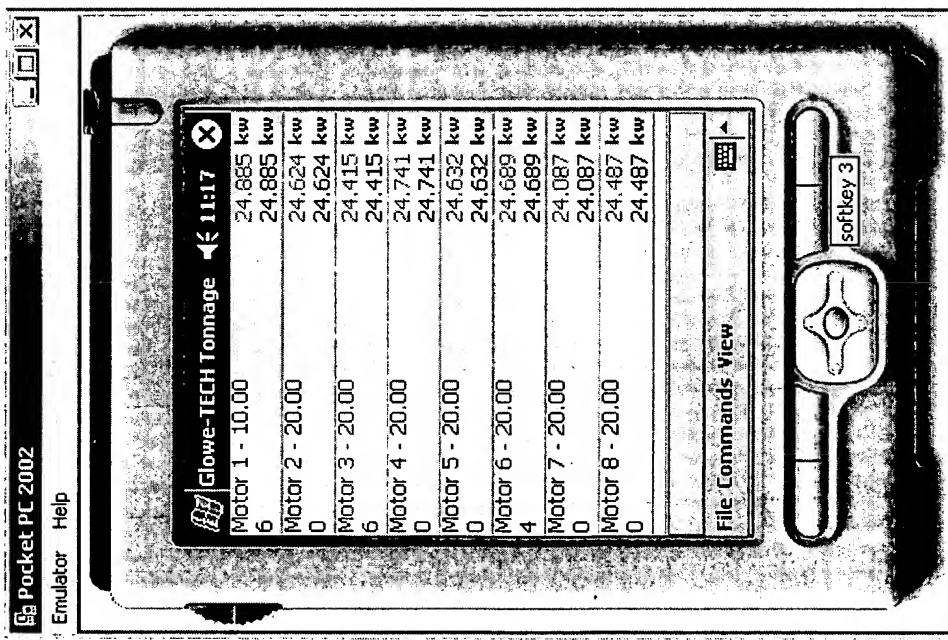


Figure 24 PDA Tonnage Analyzer

- Motor view with kwatt values and finished zero tests with new No-load values for motors 1, 3, and 6. All future tonnage conversions will be based on new No-Load values.

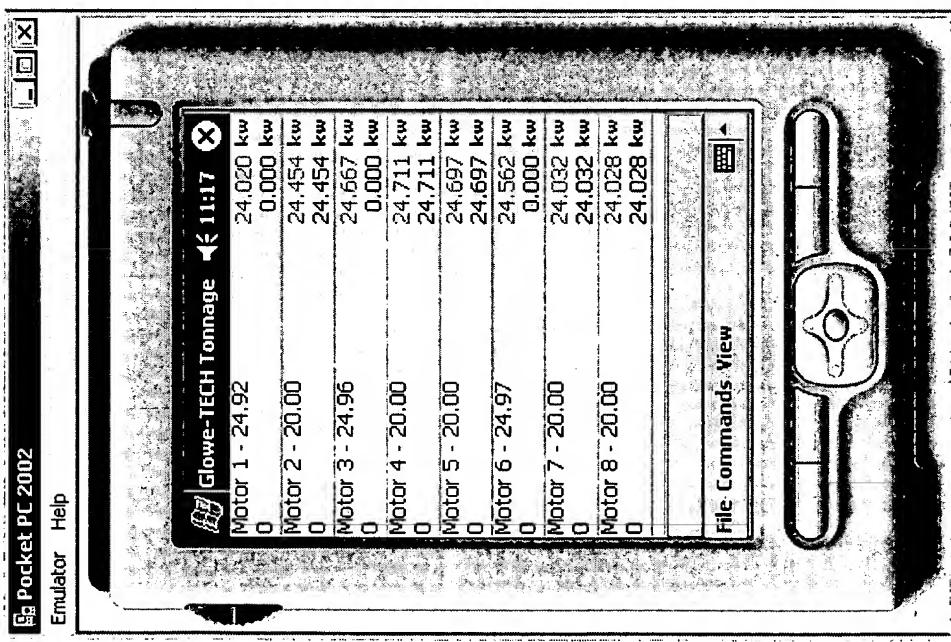


Figure 25 PDA Tonnage Analyzer

- Daily Summary Report including Total tonnage, Production time, No-Load time and new No-load calibration value.

Nom	Te Total	Temps de Production	Temps de NoLoad	NoLoad
CV 212	58.26376	00:14:12	00:01:40	24.91902
CV 213	57.84868	00:14:04	00:01:48	24.90978
CV 214	58.58227	00:14:16	00:01:36	24.95023

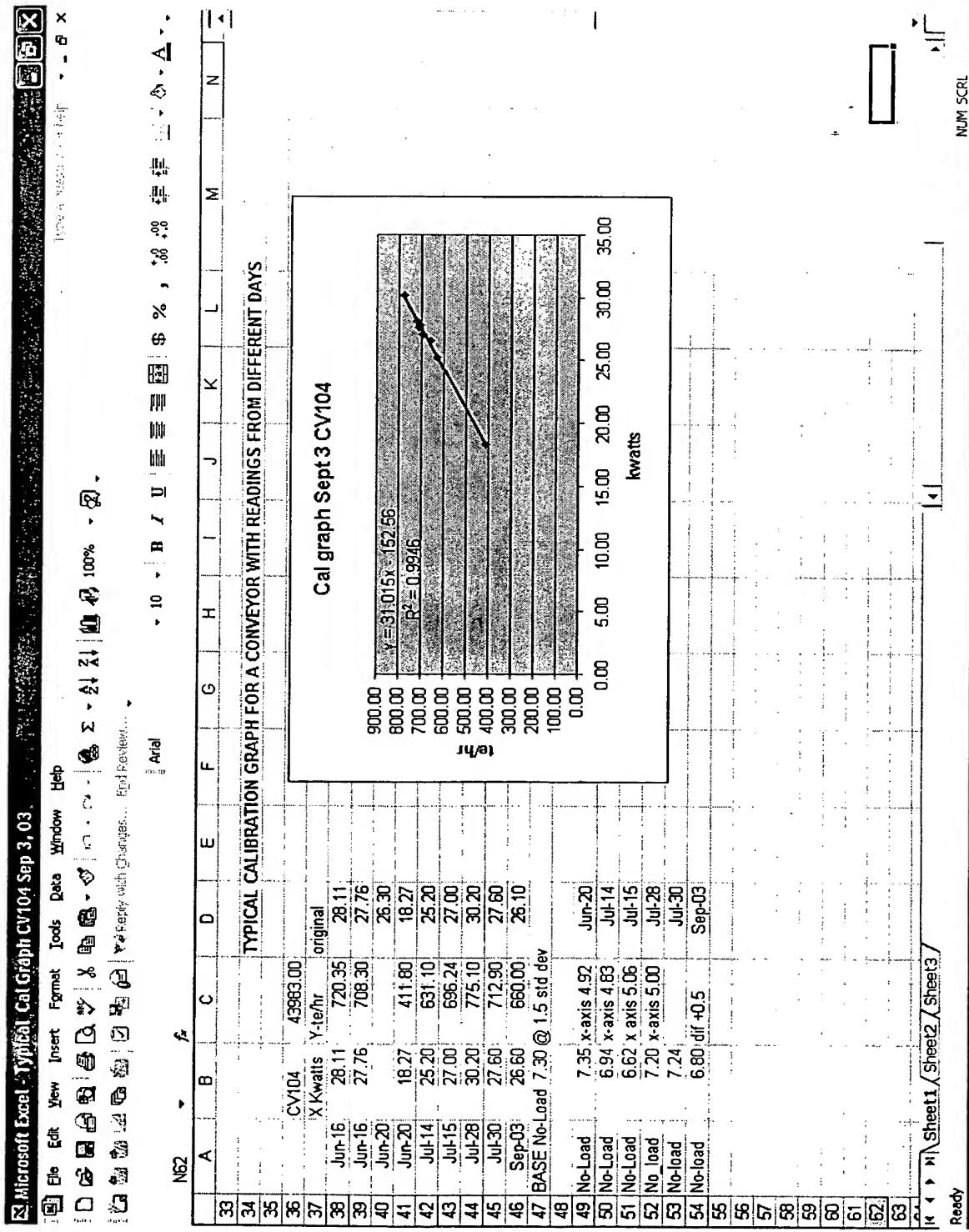


Figure 13c



Figure 16a

Glowe-Tech Tonnage Analyzer

- Real Time Program showing total tonnage, tph, production time, and No-Load time values

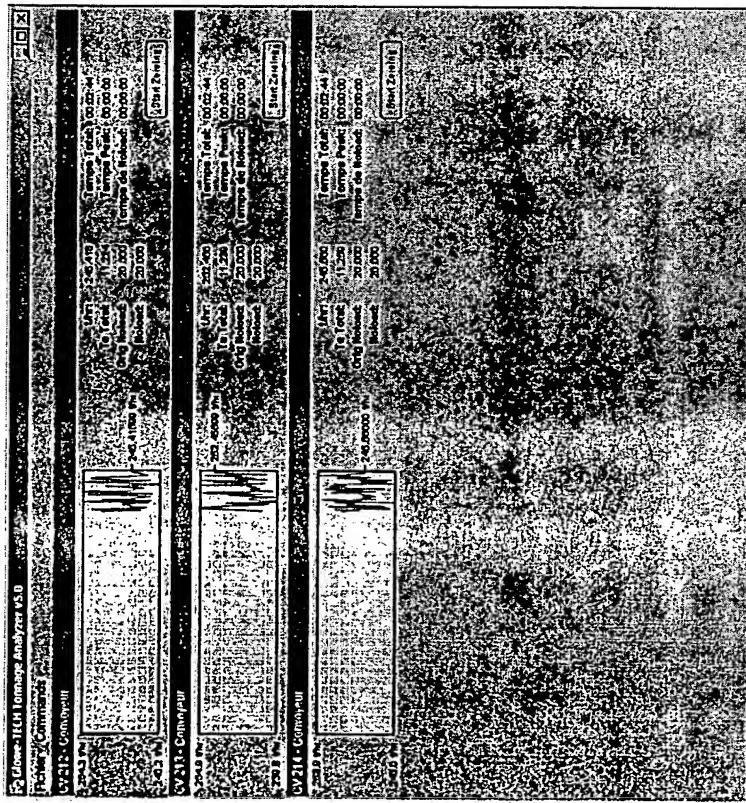


Figure 17

Glowe-Tech Tonnage Analyzer

- Zero test activated as shown in Red

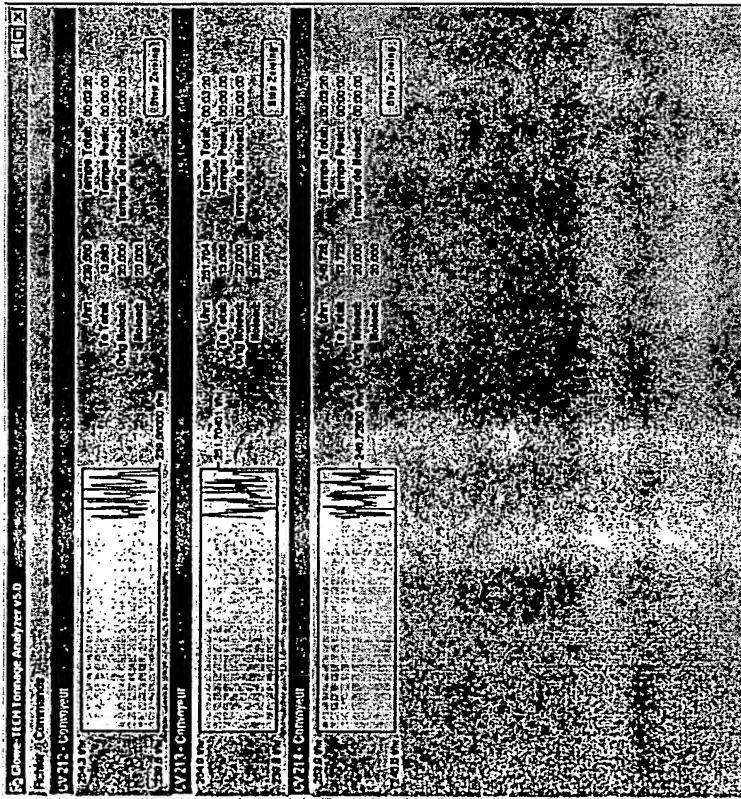


Figure 19

Glowe-Tech Tonnage Analyzer

- Running with tonnage values totalized and shown as tph, updated every second.

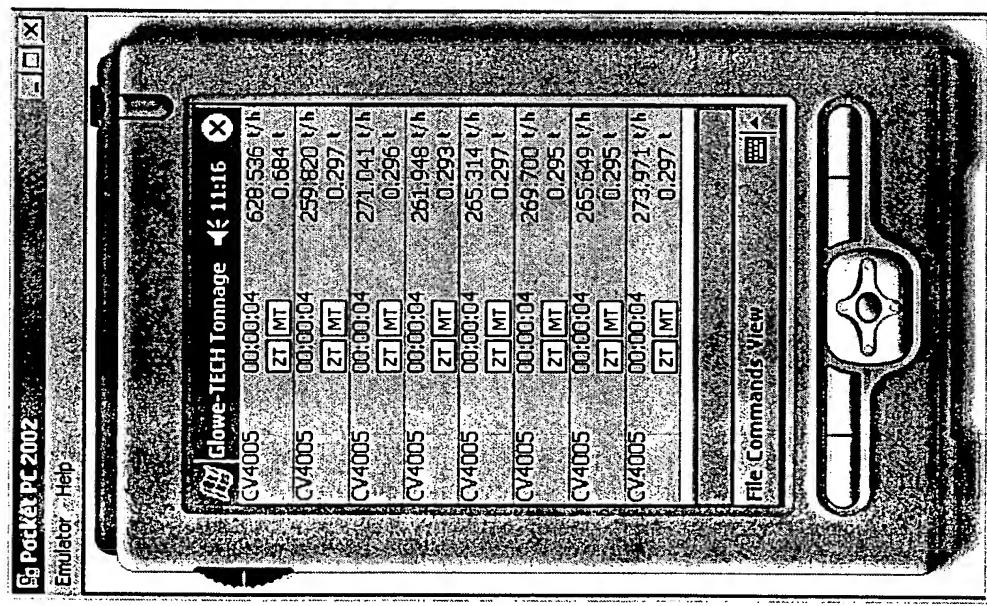


Figure 22

Glowe-Tech Tonnage Analyzer

- Program startup with graphic display of last 20 minutes of data in Real Time.

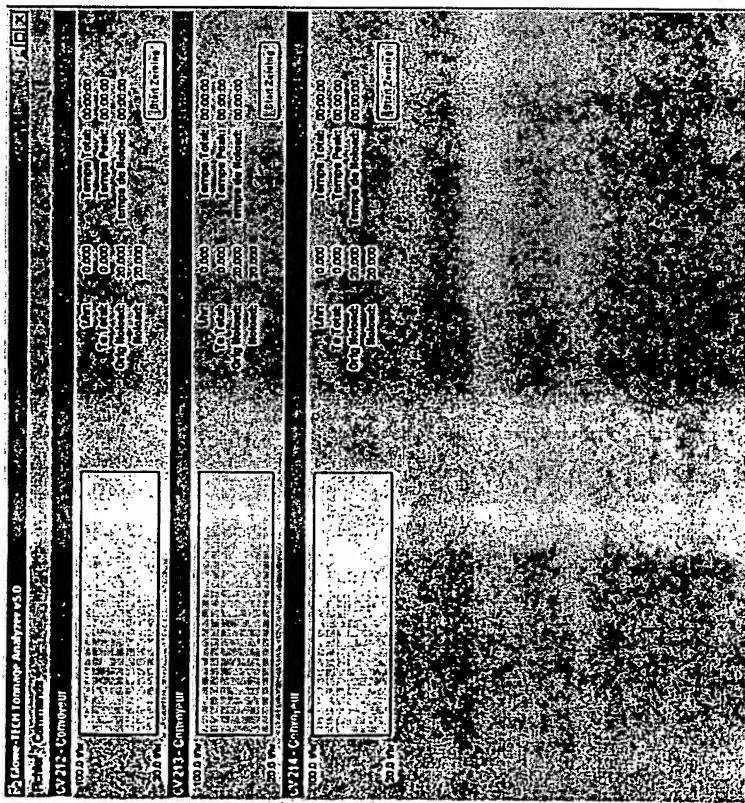


Figure 20

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- BLACK BORDERS**
- IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- FADED TEXT OR DRAWING**
- BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- SKEWED/SLANTED IMAGES**
- COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- GRAY SCALE DOCUMENTS**
- LINES OR MARKS ON ORIGINAL DOCUMENT**
- REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.
As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.